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FEDERAL AVIATION AGENCY
FLIGHT STANDARDS SERVICE
Washington 25, D. C.

May 14, 1962

CIVIL AIR REGULATIONS DRAFT RELEASE NO. 62-23


SUBJECT: Applicability Limitation of Part 3 of the Civil Air Regulations

The Flight Standards Service of the Federal Aviation Agency has under consideration proposals to amend the Civil Air Regulations relating to the applicability of Part 3. Part 4b will be also affected by these proposals. A discussion of the reasons for the proposals is set forth in the explanatory statement of the attached proposal which is being published in the Federal Register as a notice of proposed rule making.

The Flight Standards Service desires that all persons who will be affected by the requirements of this proposal be fully informed as to its effect upon them and is therefore circulating copies in order to afford interested persons ample opportunity to submit comments as they may desire.

Because of the large number of comments which we anticipate receiving in response to this draft release, we will be unable to acknowledge receipt of each reply. However, you may be assured that all comment will be given careful consideration.

It should be noted that comments should be submitted in duplicate to the Docket Section of the Federal Aviation Agency, and in order to insure consideration should be received on or before July 19, 1962.


Acting Director,
Flight Standards Service

**FEDERAL AVIATION AGENCY
FLIGHT STANDARDS SERVICE**

[14 CFR Parts 3 and 4b]

[Regulatory Docket No. 1206; Draft Release No. 62-23]

NOTICE OF PROPOSED RULE MAKING

**Applicability Limitation of Part 3 of the
Civil Air Regulations**

Pursuant to the authority delegated to me by the Administrator (14 CFR 405.27), notice is hereby given that there is under consideration a proposal to amend Parts 3 and 4b of the Civil Air Regulations as hereinafter set forth.

Interested persons may participate in the making of the proposed rules by submitting such written data, views, or arguments as they may desire. Communications should be submitted in duplicate to the Docket Section of the Federal Aviation Agency, Room C-228, 1711 New York Avenue, N.W., Washington 25, D.C. All communications received on or before July 19, 1962, will be considered by the Administrator before taking action upon the proposed rules. The proposals contained in this notice may be changed in the light of comments received. All comments submitted will be available in the Docket Section for examination by interested persons at any time.

Part 3 of the Civil Air Regulations was promulgated, effective November 13, 1945, and was applicable to all normal, utility, and aerobatic category airplanes, irrespective of their weight or performance. Part 4b was made effective on November 9, 1945, and was applicable to all transport category airplanes, irrespective of their weight or performance. A demarcation was thus drawn between airplanes intended to be used as transport category airplanes by air carriers or commercial operators, and other airplanes intended for general aviation use.

In 1953, the Civil Aeronautics Board, then having rule making jurisdiction in this instance, found it necessary to narrow the distinction made between the transport category, and normal, utility, and aerobatic categories. By Amendment 3-10, effective May 16, 1953, the Board restricted applicability of Part 3 to airplanes having a maximum weight of 12,500 pounds or less. In the preamble of that amendment the Board stated in part: "In recent years considerable study has been devoted to Part 3 with respect to its applicability to large airplanes. These studies, in the light of past experience, indicate that Part 3 with the various changes made to it during recent years would not result in an acceptable level of safety for future

designs or relatively large airplanes irrespective of their use. Therefore, section 3.0 is amended to limit the future applicability of Part 3 to airplanes having a maximum weight of 12,500 pounds or less." The Board thus held that the inherent characteristics of large airplanes carried them outside the standard set in Part 3 as the minimum required in the interest of safety.

The Flight Standards Service has found that, apart from characteristics associated with weight, Part 3 airplanes, since 1953, have reflected substantial technological development in the direction of increased performance, utility, and general sophistication. The increasing use of turbine engines to propel these airplanes has definitely accelerated this development and has resulted in airplanes capable of operating at very high speeds and altitudes. The Flight Standards Service believes that modern high performance airplanes have characteristics going beyond those envisaged originally in the application of Part 3 and for this reason Part 3 does not establish for such airplanes the minimum airworthiness standards required in the interest of safety.

Standards for cabin pressurization, fatigue strength determinations, control surface loads, temperature and altitude accountability in performance determinations, takeoff and balked landing performance capability, gust criteria, compressibility effects, are all examples of areas where presently effective Part 3 does not provide adequate or definitive standards with respect to the capabilities of modern high performance airplanes. An attempt was made to bring Part 3 up to date with respect to strength requirements by proposing several amendments of the structure provisions, as published in Draft Release No. 61-12. Comments made on that draft release indicated, however, that the proposed amendments might be, in certain respects, premature and they were deferred for further study. Irresolution of the issues involved makes even more pressing an expression of standards appropriate to the speed, altitude, and maneuverability characteristics of small airplanes, particularly those incorporating turbine engines.

It is proposed, therefore, to amend Part 3 by further restricting its applicability to exclude not only those airplanes which have a maximum weight exceeding 12,500 pounds, but also those airplanes weighing more than 6,000 pounds which have a design diving speed corresponding with a Mach number exceeding 0.85 or which have a maximum operating altitude exceeding 25,000 feet. In connection with the proposed altitude restriction, it is also proposed to require the establishment of a maximum operating altitude as an operating limitation.

The proposal to limit the applicability of Part 3 may result in high performance airplanes in the 6,000- to 12,500-pound weight range being certificated under Part 4b requirements. In recognition of the fact that airplanes in the lower weight range can generally be maneuvered more abruptly than large airplanes, the strength requirements for the normal category specify the maneuver load factor as an inverse function of the maximum weight of the airplane. Part 4b, on the other hand, specifies a minimum maneuver load factor of 2.5 regardless of the airplane weight. In the past only one airplane type of less than 12,500 pounds maximum weight has been certificated under Part 4b.

In order to provide appropriate maneuvering strength requirements for smaller airplanes which might nevertheless be certificated in accordance with Part 4b, it is proposed to amend § 4b.211 to incorporate the same maneuver load factor formula as now prescribed in Part 3 for the normal category. This would result in a slight increase in load factor for airplanes in the 30,000-pound weight range, and no increase for airplanes weighing more than 50,000 pounds. It is also proposed to amend § 4b.210(c)(1) to make it consistent with the proposal for § 4b.211.

While certain airplanes previously covered by Part 3 might be certificated in accordance with the transport category requirements of Part 4b under this proposal, it should be noted that this does not mean that they would be required to comply with requirements which are applicable to transport category airplanes used in air carrier operation. Certain airworthiness rules have been adopted, which are specifically applicable in air transportation, by amending the air carrier operation parts to include specific provisions relating, for example, to performance operating limitations, airframe surface ice protection, oxygen requirements, ditching and flight and navigational equipment. Corresponding and implementing provisions in Part 4b are mandatory for airplanes operated in accordance with air carrier operation rules but are otherwise optional for basic type certification. A distinction has been made, therefore, between the use of transport category airplanes by air carriers or other operators subject to the air carrier operating rules and by other persons who are not subject to those rules.

The effect of this proposal is to make Part 4b applicable to airplanes operating at relatively high speeds and altitudes. In this connection, such airplanes would also have to comply with the applicable SR-422 series regulations if they were equipped with turbine engines.

Under this proposal the amendments of Parts 3 and 4b would apply to all airplanes certificated under those parts after the effective date of these amendments, regardless of the date of application for type certificate, by appropriate amendments of §§ 3.11 and 4b.210.

In consideration of the foregoing, it is proposed to amend Parts 3 and 4b of the Civil Air Regulations (14 CFR Parts 3 and 4b, as amended) as follows:

1. By amending § 3.0 to read as follows:

3.0 *Applicability of this part.* This part establishes standards with which compliance shall be demonstrated for the issuance of and changes to type certificates for normal, utility, and acrobatic category airplanes. Type certification in accordance with this part shall be limited to:

(a) Airplanes of 12,500 pounds maximum weight or less, which do not have a design dive speed exceeding a value corresponding with a Mach number of 0.65;

(b) Airplanes of 12,500 pounds maximum weight or less, which do not have a maximum operating altitude exceeding 25,000 feet; and

(c) Airplanes of 6,000 pounds maximum weight or less, regardless of their design dive speed and maximum operating altitude.

2. By amending § 3.11 by adding a new paragraph (f) to read as follows:

3.11 *Designation of applicable regulations.*

* * * * *

(f) The provisions of §§ 3.0, 3.737, 3.751, and 3.778, as amended effective , shall be applicable to all airplanes certificated after that date regardless of the date of application for type certificate.

3. By amending § 3.737 by deleting the number "3.750" and inserting in lieu thereof the number "3.751."

4. By adding a new § 3.751 to read as follows:

3.751 *Maximum operating altitude.*

A maximum operating altitude shall be established up to which operation is permitted, as limited by flight, structural, powerplant, functional, or equipment characteristics.

5. By amending § 3.778 by adding a new paragraph (h) to read as follows:

3.778 *Operating limitations.*

* * * * *

(h) *Maximum operating altitude.* The altitude established in accordance with § 3.751 shall be included, together with an explanation of the limiting factors.

6. By amending § 4b.210(c)(1)(i) to read as follows:

4b.210 *General.* * * *

* * * * *

(c) *Design fuel and oil loads.* * * *

(1) * * *

(i) For airplanes certificated after , a positive maneuver load factor of not less than 90 percent of the value prescribed in § 4b.211(a)(1).

7. By amending § 4b.211 by deleting subparagraphs (a)(1) and (a)(2) and inserting in lieu thereof:

*4b.211 Flight envelopes. * * **

*(a) Maneuvering load factors. * * **

(1) The positive maneuvering load factor, n , for any flight speed up to V_D shall not be less than the value determined by the following equation, except that n need not be greater than 3.8 and shall not be less than 2.5:

$$n = 2.1 + \frac{24,000}{W + 10,000};$$

where W is the design takeoff weight.

(2) The negative maneuvering load factor shall have a magnitude of not less than $-0.4n$ at all speeds up to V_C , varying linearly with speed from the value at V_C to zero at V_D .

These amendments are proposed under the authority of sections 313(a), 601, and 603 of the Federal Aviation Act of 1958 (72 Stat. 752, 775, 776; 49 U.S.C. 1354, 1421, 1423).



Acting Director,
Flight Standards Service

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